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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Application Number: 09/614,118
Filing Date: July 11, 2000
Appellant(s): CANNELL ET AL.

Anthony C. Tridico
Reg. No. 45,958
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed December 01, 2006 appealing from the Office action mailed 04/12/2006.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

4,900,545	WISOTZKI et al.	02-1990
5,660,838	KOGA et al.	08-1997
5,641,477	SYED et al.	06-1997
6,116,250	BUHEITEL	09-2000
4,935,229	NAITO et al.	06-1990

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

A. Claim 30 remains rejected under 35 U.S.C. §112, 1st paragraph, as containing new matter.

B. Claims 30-56 remain rejected under 35 U.S.C. §103(a) as being unpatentable over:

(1) Wisotzki *et al.* (U.S. Patent no. 4,900,545) (hereinafter, "Wisotzki") in view of Buheitel (U.S. Patent No. 6,116,250) or Naito *et al.* (U.S. Patent No. 4,935,229) (hereinafter "Naito");

(2) Koga *et al.* (U.S. Patent No. 5,660,838) (hereinafter "Koga") in view of Buheitel ('250) or Naito *et al.* ('229); and

(3) Syed *et al.* (U.S. Patent No. 5,641,477) (hereinafter "Syed") in view of Buheitel ('250) or Naito *et al.* ('229).

Note: Upon further consideration, the 35 U.S.C. §112, 1st paragraph enablement rejection of claims 30-56 has been *withdrawn*.

A. Claim 30 is rejected under 35 U.S.C. §112, 1st paragraph, as containing new matter:

Applicant's recitation of "*at least*" 45°C in instant claim 30 presents new matter since there is lack of support for this limitation in the present specification. While the limitation "*at* 45°C" and "at 130°C" is supported by the instant disclosure, the limitation "*at least*" 45°C is not supported by the instant specification.

(10) Response to Argument A:

Appellant argues, "Appellants amended claim 30 in the Reply filed February 2, 2005. In that paper, they noted that support for the amendment could be found throughout the specification, and they specifically pointed to several sources of support. In particular, Appellants noted that pages 6-7 describe the generic concept that a composition of the invention can be used to protect keratinous fiber from heat, such as that from hair dryers or curlers. (Feb. 2, 2005, Reply, page 11.) Appellants also pointed out that the various Examples describe applying compositions of the invention to swatches of hair heated with a blow dryer (referred to as "treated at 45°C") or to swatches heated with a flat iron (referred to as "treated at 130°C"). (*Id.*)

The disclosure provides both the generic concept of protecting a keratinous fiber from extrinsic damage caused by heat, and working examples that include heating steps in which the keratinous fiber is heated to 45°C or 130°C. Thus, the skilled artisan would readily appreciate that the discussion in the

original disclosure supports a heating step that includes not only 45°C and 130°C, but also all points in between those two values. Moreover, the original disclosure supports more than just the two temperatures mentioned in the working examples: it discloses the generic concept that the compositions can be used to protect keratinous fibers from heat. Thus, the facts of this case are not the same as those of In re Wertheim, 541 F.2d 257,191 U.S.P.Q. 90 (CCPA 1976), where the original specification placed a boundary on the upper limit of a range but the claim language extended beyond that boundary.

The skilled artisan would readily appreciate that Appellants had described a method in which the keratinous fiber was heated to "at least" 45°C. The "45°C" aspect of the language is explicitly supported by the various examples. The "at least" aspect of the language is supported by the range demonstrated in the working examples in combination with generic disclosure."

These arguments have been fully considered, but were not found to be persuasive. It is noted, that, while certain examples of the instant specification demonstrate treating swatches of hair at 45°C (see Example 3, p. 24) and at 130°C (see Example 3, p. 24 & Example 4, p.29), the instant specification fails to provide adequate support for *at least* 45°C as claimed herein. The Appellants argument that "support for the amendment is disclosed on pages 6-7, which describe the generic concept that a composition of the invention can be used to protect keratinous fiber from heat, such as hair dryers or curlers", was not persuasive since while a generic concept with regard to protecting hair is disclosed, the support relied upon by Appellant does not, in any manner, refer to heating at a temperature of *"at least"* 45°C as instantly claimed. The specification merely discloses "at 45°C" and "at 130°C". Nowhere in the instant specification can the Examiner find support for the claim language *"at least"* 45°C as recited in independent claim 30. The "at least" aspect of the claim language, contrary to Appellant's argument, has not

been supported based on the disclosure provided. Appellant has demonstrated ample support for "at 45°C" and "at 130°C", but not for "*at least*" 45°C as instantly claimed.

B. (1) Claims 30-56 are rejected under 35 U.S.C. §103(a) as being unpatentable over Wisotzki *et al.* (U.S. Patent No. 4,900,545) (hereinafter, "Wisotzki") in view of Buheitel (U.S. Patent No. 6,116,250) or Naito *et al.* (U.S. Patent No. 4,935,229) (hereinafter "Naito");

Wtsotzki ('545) teaches a method for the regeneration of hair split-ends and for caring for and revitalizing mistreated hair, comprising applying to the hair, a treatment composition comprising mono- or disaccharides, more especially, the pentoses (5 C-atoms) and hexoses (6 C-atoms), and also the disaccharides derived from the pentoses and hexoses (see reference column 1, line 49 through col. 2, line 49).

Wisotzki teaches that the mono- or disaccharides are any aldoses and ketoses or their mixtures. Wisotzki further teaches that suitable monosaccharides include glucose, mannose, galactose, ribose, arabinose, xylose, fructose and sorbose, while suitable disaccharides include sucrose, lactose, maltose and cellobiose (col. 2, line 36-49). Also suitable are naturally occurring or technical mixtures wherein the mentioned mono- or disaccharides are predominant. Glucose is used as an example, in this instance.

The treatment preparations are in the form of aqueous solutions or emulsions, which may be formulated into shampoos or permanent wave setting lotions (cols. 3 and 5-6). Wisotzki teaches that the sugars are present in the composition in percentages ranging from 0.1% to 8% by weight (col. 2, lines 24-30). This range clearly meets the applicant's required range of 0.01% to 5.00%.

The instant invention is drawn to a method of protecting a keratinous fiber from extrinsic damage or repairing a keratinous fiber following extrinsic damage, comprising the application of C_3-C_5 monosaccharide sugar composition.

Wisotzki teaches such a method for regenerating, revitalizing or *repairing* hair comprising applying mono- or disaccharide sugar, particularly of pentoses (5 C-atoms) and the disaccharides derived from pentoses (see col. 2, lines 36-40). Wisotzki teach at col. 6, lines 3-5, that, "in every case, it was found that the hairs had been regenerated, i.e., the split-ends had been partially repaired."

Wisotzki *et al.* do not teach the step of heating said keratinous fiber to at least 45°C.

Buheitel ('250) teaches a permanent hair shaping composition and process for permanently shaping hair comprising the step of allowing the permanent shaping composition to advantageously react at a higher temperature, particularly at 30° to 45°C. For stabilizing the hairstyle, hair is preferably treated with alternative styling processes using higher temperatures in the range of 30° to 55°C (see reference column 2, lines 59-61); (col. 5, line 38 – col. 6, line 17). The hair shaping corresponds to a permanent shaping composition, which is commonly used for severely damaged hair through chemicals, *i.e.*, oxidatively treated hair (col. 3, lines 22-33).

It would have been obvious to one of ordinary to one of ordinary skill in the art at the time the invention was made to employ higher temperatures, such as 30° to 55°C, as taught by Buheitel within the processes employed by Wisotzki, who teaches a method of repairing split-end hair, comprising sugars because Buheitel teaches that it is advantageous to allow the permanent shaping composition to advantageously react at a higher temperature, particularly at

30° to 45°C and alternatively at 30° to 55°C in order to lessen the reaction time for oxidatively treated hair or severely damaged hair. The expected result would be an enhanced method for the care of treated and untreated hair.

The teachings of Wisotzki are delineated above. Wisotzki *et al.* do not teach the step of heating said keratinous fiber to at least 45°C.

Naito *et al.* ('229) teach a heating permanent waving agent and method comprising heating hair at a temperature of 40° to 160°C. The heating temperature and time vary depending on the degree in which the hair is allowed to be damaged (col. 5, lines 16-32). Naito *et al.* teach that healthy hair, which is free of any permanent waving, hair dyeing or bleaching, is treated more advantageously at higher temperatures. They also teach that taking into account the damage of the hair by heating, the temperature is 40° to 160°C, preferably from 40° to 80°C (col. 5, lines 32-59). Naito *et al.* teach that especially, the application of the waving agent using heat, is advantageous in solving problems of known permanent waving agents because, since highly concentrated alkaline agents or reducing and oxidizing substances are not used, damages of the hair caused by elution of hair proteins can be mitigated. The agent of their invention is less irritating to the skin and has better storage stability.

It would have been obvious to one of ordinary to one of ordinary skill in the art at the time the invention was made to employ higher temperatures, such as the 40° to 160°C, as taught by Naito *et al.* within the processes employed by Wisotzki, who teaches a method of repairing split-end hair, comprising sugars because Naito *et al.* teach that it is especially advantageous to

treat healthy hair at higher temperatures (*i.e.*, 40° to 160°C) and also teach that damage to hair caused by elution of hair proteins can be mitigated, when employing such temperatures (*i.e.*, 40° to 160°C). The expected result would be an improved, gentle and non-irritating hair treatment method for use on both healthy and damaged hair.

(10) Response to Argument B(1):

Appellant argues, "Wisotzki teaches compositions that can be used in hair rinses to reduce the number of split ends. The compositions comprise at least one mono- or disaccharide, but glucose, a C6 sugar, is preferred. In the Examples, Wisotzki prepares hair rinse compositions and allows them to cool either to 25°C or 30°C before use. It is unclear from the examples, however, if the compositions are actually applied to a keratinous fiber at those temperatures. Even if the compositions are applied at 25°C or 30°C, Wisotzki does not anywhere teach that the keratinous fiber should be heated during or after application of the composition. The only "heating" taught by Wisotzki is in formulating the composition, which is not a teaching that the keratinous fiber should be heated during or after application of the composition."

Appellant's arguments were not found persuasive. The Wisotzki reference teaches the preparation of hair rinses involving aqueous dispersions. The reference recognizes cooling to temperatures around 40°C, 30°C and 25°C (see Example at columns 5-6). While the reference refers to heating during formulation of the composition, the reference nonetheless demonstrates the application of fairly high temperatures, whereby the end result yields the repair or regeneration of split ends (col. 6, lines 3-5).

Appellant argues, "The Office acknowledges that Wisotzki does not teach heating a keratinous fiber to at least 45°C. To overcome this shortcoming in the teachings of Wisotzki, the Office turns to the teachings of Buheitel or Naito. Buheitel teaches a method of permanently

shaping hair. Buheitel teaches that heat can be applied to hair at 30 to 45°C and teaches that during styling, hair can be dried at 30 to 45°C or at 30 to 55°C. Buheitel does not remedy the defect in the primary reference at least because Buheitel's teaching is limited to heating hair during a permanent shaping process. Nothing in Buheitel teaches or suggests that a heating step would be advantageous with respect to repairing split ends with a composition of Wisotzki."

Applicant's arguments have been considered but were not found persuasive. The Wisotzki reference recognizes the use of temperatures as high as 30°C. While Wisotzki does not teach the step of heating at least 45°C as claimed, the Buheitel and Naito patents sufficiently remedy this deficiency of Wisotzki by their teaching of heating keratinous fibers to a temperature in the range of 30° to 55°C (Buheitel) and at a temperature of 40° to 160°C (Naito). Both references recognize and teach that employing high temperatures in heating processes is advantageous. Appellant's argument that "Buheitel's teaching is limited to heating during a permanent shaping process, rather than heating with respect to repairing split ends" was not persuasive since the Buheitel reference was relied upon for the teaching that it is well known in the art to employ higher temperatures when heating keratinous fibers, namely, at temperatures encompassing 45°C or greater. In this regard, Buheitel explicitly teaches treating keratinous fibers to a temperature in the range of 30° to 55°C, which sufficiently meets Appellant's claimed temperature of at least 45°C, albeit, for a permanent hair shaping process (see Buheitel col. 5, line 38 – col. 6, line 17). Moreover, Buheitel's composition corresponds to a permanent shaping composition, which is commonly used for severely damaged hair through chemicals, i.e., oxidatively treated hair (col. 3, lines 30-33). Furthermore, the Examiner points out that the primary reference, Wisotzki, initially suggests and teaches a method for the regeneration of hair split-ends and for caring and revitalizing mistreated hair, which comprises application to the hair of a treatment composition comprising Appellant's claimed ingredients, namely, sugars, such as

monosaccharides, more especially, pentoses (5 C-atoms) (see for instance, col. 1, line 61 – col. 2, line 49). Thus, Appellant's argument that Buheitel's process for heating hair at higher temperatures (30° to 55°C) is for a different purpose (*i.e.*, shaping and not repairing hair) was not deemed persuasive since the art vividly recognizes and teaches the use of high temperatures to treat and heat hair, including damaged hair, to obtain effective results.

Appellant argues, "As an alternative source of the teaching that hair can be treated to temperatures that are at least 45°C, the Office relies on Naito. Naito teaches hair-waving agents comprising a thioglyceryl alkyl ether or 1-phenyl-2-mercaptoethanol as a main ingredient. The Office points to Naito's teaching of heating the hair to 40 to 160°C. Although Naito teaches a method that comprises a heating step, it is limited to methods using their permanent waving composition, which is not a composition for treating split ends. Naito, like Buheitel, does not teach or suggest that a heating step would be advantageous with respect to repairing split ends with a composition of Wisotzki."

Appellants are basing their arguments in the direction that the Office has not established a *prima facie* case of obviousness because the secondary reference, Naito, teaches a permanent waving composition rather than a composition for treating split ends. These arguments were not found persuasive. For similar reasons as advanced above with regard to Buheitel, the Examiner points out that the Naito reference was relied upon for their teaching of employing methods for heating hair at higher temperatures, particularly, at temperatures of 40° to 160°C as taught by Naito (see col. 5, lines 27-46). The temperatures for heating hair disclosed by Naito sufficiently meet the temperatures instantly claimed herein. While Naito's methods and compositions are drawn towards hair waving, nonetheless, Naito recognizes the step of heating hair by applying high temperatures that meet Appellant's claimed temperatures (*i.e.*, at least 45°C). Moreover, Naito teaches that taking into account the damage caused by heating hair, a suitable temperature

range is from 40° to 160°C (col. 5, lines 35-37). Naito also teach that healthy hair, which is free of any permanent waving, hair dyeing or bleaching, is treated more advantageously at higher temperatures (col. 5, lines 32-34). Thus, Appellant's argument that Naito teaches heating hair for hair-waving purposes versus for repairing hair, as instantly desired, was not found persuasive, since the prior art does teach heating hair to similar temperatures as claimed by Appellant. Furthermore, as delineated above, Wisotzki initially teaches a method for the regeneration of hair split-ends and methods for revitalizing mistreated hair (see for instance, col. 1, line 61 – col. 2, line 49), which meets the same purpose criteria for heating hair as desired by Appellant.

B. (2) Claims 30-56 are rejected under 35 U.S.C. §103(a) as being unpatentable over Koga *et al.* (U.S. Patent No. 5,660,838) (hereinafter, "Koga") in view of Buheitel (U.S. Patent No. 6,116,250) or Naito *et al.* (U.S. Patent No. 4,935,229) (hereinafter "Naito");

***Koga* ('838)** teaches a method for providing enhanced moisture retention and reducing excessive roughness and dryness of the hair comprising the application of a xylobiose sugar composition to the hair (see Abstract). Koga teaches that xylobiose preparations are effective not only in reducing excessive roughness and dryness of the skin to impart a natural moistness and luster but also in reducing excessive roughness and dryness of the hair to give a natural oiliness (col. 1, lines 8-14).

Xylobiose may be incorporated into hair care products, such as hair treatments, rinses and hair conditioners, and detergents such as hair shampoos and body shampoos. The preparations

can be formulated into various dosage forms, such as aqueous solutions, emulsions and water/oil bilayer systems (col. 2, lines 14-26).

Xylobiose is taught to be contained in an amount of 0.0001% to 20-wt %, preferably 0.1% to 10 wt % of the composition (col. 2, lines 27-36). This range clearly meets the applicant's required range of 0.01% to 5.00%.

Koga teaches that the xylobiose composition contains xylan saccharifed products other than xylobiose, such as xylose and xylotriose. These materials will in no way, impair the moisture-retaining capability of xylobiose (col. 2, lines 37-46).

Bases that are used in the cosmetic compositions can include, sugar esters, saccharides and sorbitol, for example (col. 3, lines 5-15). The examples in columns 4-9, taught by Koga demonstrate the measurements of moisture retaining capability of xylobiose in various skin preparations. In Example 7 (col. 10), Koga teaches the use of xylobiose in a hair shampoo formulation. The results show a natural oiliness when actually applied to the hair and are satisfactory in reducing excessive roughness and dryness of the hair (and skin) (col. 10, lines 1-27).

The instant invention is drawn to a method of protecting a keratinous fiber from extrinsic damage or repairing a keratinous fiber following extrinsic damage. There is no distinction observed between the prior art and the instant invention, since the prior art teaches the reduction of roughness and dryness of the hair. The examiner notes that this is, in essence, a reparative process for improving damaged hair.

Koga teaches a method for reducing excessively dry, rough hair and restoring hairs natural oiliness with moisture. Rough, dry hair is usually brittle, weak hair. As is generally

known, hair that is moist or oily tends to be stronger in nature than rough, dry hair. Koga teaches that the xylobiose composition, which is used in various forms (i.e., hair care products, such as hair treatments, conditioners, rinses, shampoos, etc), reduces the excessive dryness and roughness of hair.

Koga does not teach the step of heating said keratinous fiber to at least 45°C.

Buheitel ('250) teaches a permanent hair shaping composition and process for permanently shaping hair comprising the step of allowing the permanent shaping composition to advantageously react at a higher temperature, particularly at 30° to 45°C. For stabilizing the hairstyle, hair is preferably treated with alternative styling processes using higher temperatures in the range of 30° to 55°C (see reference column 2, lines 59-61); (col. 5, line 38 – col. 6, line 17). The hair shaping corresponds to a permanent shaping composition, which is commonly used for severely damaged hair through chemicals, *i.e.*, oxidatively treated hair (col. 3, lines 22-33).

It would have been obvious to one of ordinary to one of ordinary skill in the art at the time the invention was made to employ higher temperatures, such as 30° to 55°C, as taught by Buheitel within the processes employed by Koga because Buheitel teaches that it is advantageous to allow the permanent shaping composition to advantageously react at a higher temperature, particularly at 30° to 45°C and alternatively at 30° to 55°C in order to lessen the reaction time for oxidatively treated hair or severely damaged hair. The expected result would be an enhanced method for the treatment of hair.

The teachings of Koga are delineated above. Koga does not teach the step of heating said keratinous fiber to at least 45°C.

Naito *et al.* ('229) teach a heating permanent waving agent and method comprising heating hair at a temperature of 40° to 160°C. The heating temperature and time vary depending on the degree in which the hair is allowed to be damaged (col. 5, lines 16-32). Naito *et al.* teach that healthy hair, which is free of any permanent waving, hair dyeing or bleaching, is treated more advantageously at higher temperatures. They also teach that taking into account the damage of the hair by heating, the temperature is 40° to 160°C, preferably from 40° to 80°C (col. 5, lines 32-59). Naito *et al.* teach that especially, the application of the waving agent using heat, is advantageous in solving problems of known permanent waving agents because, since highly concentrated alkaline agents or reducing and oxidizing substances are not used, damages of the hair caused by elution of hair proteins can be mitigated. The agent of their invention is less irritating to the skin and has better storage stability.

It would have been obvious to one of ordinary to one of ordinary skill in the art at the time the invention was made to employ higher temperatures, such as the 40° to 160°C, as taught by Naito *et al.* within the processes employed by Koga because Naito *et al.* teach that it is especially advantageous to treat healthy hair at higher temperatures (*i.e.*, 40° to 160°C) and also teach that damage to hair caused by elution of hair proteins can be mitigated, when employing such temperatures (*i.e.*, 40° to 160°C). The expected result would be effective and non-irritating hair treatment method for use on healthy and unhealthy (treated) hair.

(10) Response to Argument B(2):

Appellant argues, "Koga teaches moisture-retaining compositions for the skin that contain the C5 disachharide xylobiose (col. 1, lines 28-36 & 44-58). The Office acknowledges that Koga does not teach the recited step of heating a keratinous fiber to at least 45°C. The only time Koga discusses a temperature, is with respect to humidity chamber experiments at column 4-7. Koga does not teach heating a keratinous fiber, despite the Office's reference to humidity chamber experiments in which the composition (not applied to a keratinous fiber) was heated. Koga does not teach the claimed method step of heating a keratinous fiber and does not provide any suggestion to heat the keratinous fiber during or after the application of the composition. To remedy the deficiencies of Koga, the Office again turns to Buheitel or Naito. Neither Buheitel nor Naito involve a composition for retaining moisture, as taught in Koga, so the methods of Buheitel and Naito are not analogous to the methods of Koga."

Appellant's arguments were not persuasive. Admittedly, while the Koga reference does not teach applying heat to a keratinous fiber at a temperature of at least 45°C as instantly claimed, the Koga reference teaches providing or exposing the composition to a temperature of 35°C (cols. 4-7). The reference also provides methods for reducing excessive roughness and dryness of hair to give a natural oiliness, which comprises xylobiose disaccharide. The methods for reducing roughness and imparting moisture by Koga can constitute, in essence, a reparative process for hair, which is similar to the objectives desired by Appellant. Moreover, the argument that Koga does not teach heating the hair to the instantly claimed temperature of at least 45°C was not persuasive since the Examiner points out that, generally, differences in temperature will not support the patentability of subject matter encompassed by the prior art unless there is evidence indicating such temperature is critical. "[W]here the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by

routine experimentation." *In re Aller,* 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955). In this instance, Appellants have not provided for any unexpected results which result in a patentable distinction over the teachings of the cited art of record. Furthermore, the secondary reference of Buheitel was cited by the Examiner for the explicit teaching of heating hair to temperatures from 30° to 55°C, which meets Appellant's claimed temperature. Ample motivation has been provided to establish a *prima facie* case of obviousness based on the prior art teachings since Buheitel teaches treating keratinous fibers to a temperature in the range of 30° to 55°C, which sufficiently meets Appellant's claimed temperature of at least 45°C. Appellant's argument that "the methods of Buheitel are not analogous to the methods of Koga" was not persuasive since Koga initially suggests a method for improving hair, particularly by reducing roughness and imparting moisture to hair and Buheitel expressly teaches treating keratinous fibers to a temperature in the range of 30° to 55°C, whereby Buheitel's composition corresponds to a permanent shaping composition, which is commonly used for severely damaged hair through chemicals, i.e., oxidatively treated hair (col. 3, lines 30-33). The Buheitel reference recognizes and teaches that applying high temperatures in heating processes is advantageous. Additionally, the prior art teaches methods for treating hair comprising similar components (*i.e.*, sugars) as employed by Appellant. Thus, Appellant's arguments were unpersuasive.

Appellant argues, "The proposed combination of Koga in view of Naito also fails. Koga does not teach or suggest that there is any reason to heat a keratinous fiber that has been contacted with the xylobiose-containing composition. Naito's heating step is limited to methods using a permanent waving composition and Naito does not suggest that heating is itself in any way advantageous. The Office has failed to point to any clear reasons why the ordinary artisan would, without hindsight knowledge of Appellant's invention, combine the teachings of Koga with Buheitel or Naito in the manner proposed by the Office."

The Examiner was not convinced by these arguments. The teachings of Koga are discussed above. More specifically, Koga teaches a method for providing enhanced moisture retention and reducing excessive roughness and dryness of the hair comprising the application of a xylobiose sugar composition to the hair (see Abstract). Koga teaches heating of the composition at temperatures of 35°C (see col. 4). While Koga does not teach heating keratinous fibers at a temperature of 45°C, Naito remedies this deficiency by their teaching of a permanent waving agent and method comprising heating hair at a temperature of 40° to 160°C (col. 5, lines 27-37). Appellant's argument that "Naito's heating step is limited to methods using a permanent waving composition" was not persuasive because Naito, nonetheless, recognizes the step of heating hair by applying high temperatures that meet Appellant's claimed temperatures (*i.e.*, at least 45°C), albeit, for a different purpose (*i.e.*, hair waving/shaping) than that of the Appellant (*i.e.*, protecting hair). Naito also teach that taking into account the damage caused by heating hair, a suitable temperature range would be from 40° to 160°C (col. 5, lines 35-37), which meets the instant temperature of Appellant. Naito further teach that healthy hair, which is free of any permanent waving, hair dyeing or bleaching, is treated more advantageously at higher temperatures (col. 5, lines 32-34).

In response to applicant's argument that the examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the

applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971).

B. (3) Claims 30-56 are rejected under 35 U.S.C. §103(a) as being unpatentable over Syed *et al.* (U.S. Patent No. 5,641,477) (hereinafter, "Syed") in view of Buheitel (U.S. Patent No. 6,116,250) or Naito *et al.* (U.S. Patent No. 4,935,229) (hereinafter "Naito");

***Syed* ('477)** teaches a method for the reduction of hair damage and a process for relaxing hair fibers, comprising applying to the hair fibers, a lanthionization composition that comprises sugars, resulting in less damaged hair that has *greater tensile strength* as that compared to hair that does not contain sugar. The composition may contain one or more sugars, or a combination of hydrogenated starch and sugars. Syed teaches that the sugar may be contained in the composition in the range of about 0.1% to about 5.0% by weight of the composition (see reference column 2, lines 48-67). This range clearly meets the applicant's required range of 0.01% to 5.00%.

Representative sugars that can be used in the composition include, but are not limited to sucrose, glucose, fructose, sorbitol and glycerol. The sugars preferably used are sucrose or sorbitol (col. 3, lines 5-8). Syed teaches that the composition may be in the form of a solution or a cream (col. 3, lines 9-12).

The instant invention is drawn to a method of protecting a keratinous fiber from extrinsic damage or repairing a keratinous fiber following extrinsic damage, wherein repairing a damaged

keratinous fiber, according to the applicant's interpreted definition, means increasing the alpha-structure and/or increasing the tensile strength of damage to keratinous fibers.

Syed teaches a method for increasing the tensile strength and reducing hair damage comprising the application of a composition composed of sugars (i.e., sucrose, glucose, fructose, sorbitol and glycerol). Syed explicitly teaches at col. 2, lines 48-56, that the addition of a sugar, directly applied to the lanthionization composition, surprisingly, results in hair that has greater tensile strength as compared to a lanthionization composition, which does not contain any sugars.

The applicant attempts to distinguish over the prior art by including specific definitions for the terms, "protecting" and "repairing". However, the prior art fully meets the criteria for providing an effective composition for preserving or increasing the tensile strength of hair. In addition, the applicant's have not shown any unexpected results that accrue from the use of C_3-C_5 sugars. The prior art has initially shown that beneficial effects are brought about by the use of various sugars in hair compositions.

Syed *et al.* do not teach the step of heating said keratinous fiber to at least 45°C.

Buheitel ('250) teaches a permanent hair shaping composition and process for permanently shaping hair comprising the step of allowing the permanent shaping composition to advantageously react at a higher temperature, particularly at 30° to 45°C. For stabilizing the hairstyle, hair is preferably treated with alternative styling processes using higher temperatures in the range of 30° to 55°C (see reference column 2, lines 59-61); (col. 5, line 38 – col. 6, line 17). The hair shaping corresponds to a permanent shaping composition, which is commonly used for severely damaged hair through chemicals, *i.e.*, oxidatively treated hair (col. 3, lines 22-33).

It would have been obvious to one of ordinary to one of ordinary skill in the art at the time the invention was made to employ higher temperatures, such as 30° to 55°C, as taught by Buheitel within the hair damage reduction processes of Syed *et al.* because Buheitel teaches that it is advantageous to allow the permanent shaping composition to advantageously react at a higher temperature, particularly at 30° to 45°C and alternatively at 30° to 55°C in order to lessen the reaction time for oxidatively treated hair or severely damaged hair. The expected result would be an enhanced method for treating hair effectively and advantageously.

The teachings of Syed *et al.* are delineated above. Syed *et al.* do not teach the step of heating said keratinous fiber to at least 45°C.

Naito *et al.* ('229) teach a heating permanent waving agent and method comprising heating hair at a temperature of 40° to 160°C. The heating temperature and time vary depending on the degree in which the hair is allowed to be damaged (col. 5, lines 16-32). Naito *et al.* teach that healthy hair, which is free of any permanent waving, hair dyeing or bleaching, is treated more advantageously at higher temperatures. They also teach that taking into account the damage of the hair by heating, the temperature is 40° to 160°C, preferably from 40° to 80°C (col. 5, lines 32-59). Naito *et al.* teach that especially, the application of the waving agent using heat, is advantageous in solving problems of known permanent waving agents because, since highly concentrated alkaline agents or reducing and oxidizing substances are not used, damages of the hair caused by elution of hair proteins can be mitigated. The agent of their invention is less irritating to the skin and has better storage stability.

It would have been obvious to one of ordinary to one of ordinary skill in the art at the time the invention was made to employ higher temperatures, such as the 40° to 160°C, as taught by Naito *et al.* within the processes employed by Syed *et al.* because Naito *et al.* teach that it is especially advantageous to treat healthy hair at higher temperatures (*i.e.*, 40° to 160°C) and also teach that damage to hair caused by elution of hair proteins can be mitigated, when employing such temperatures (*i.e.*, 40° to 160°C). The expected result would be a gentle, yet effective method for treating hair, for ease and satisfaction to the consumer.

It is the position of the Examiner, that given the teachings of the prior art, the instant invention, when taken as a whole, would have been *prima facie* obvious to one of ordinary skill in the art at the time the invention was made.

(10) Response to Argument B(3):

Appellant argues, "Syed teaches a lanthionization process that comprises applying a composition comprising a hydrogenated starch or sugar to hair to relax the hair fibers, then removing the composition (col. 2, lines 9-15). Inclusion of the hydrogenated starch or sugar in the composition reduces the damage that the lanthionizing composition causes to the hair (col. 2, lines 48-56). Syed does not teach the step of heating a keratinous fiber to at least 45°C. Further, there is nothing in the teachings of Syed that in any way suggests that it is advantageous to heat the keratinous fiber to minimize the damage that results from the lanthionizing composition."

Appellant's arguments were not deemed persuasive. While Syed does not teach the step of heating a keratinous fiber to at least 45°C, Syed, does however, teach that the inclusion of a hydrogenated starch hydrolysate and/or sugar applied in the lanthionization compositon

surprisingly results in hair that has a *greater tensile strength* and has been *less damaged* than a lanthionization composition that does not contain a hydrogenated starch hydrolysate and/or a sugar (col. 2, lines 50-56). Syed further teach that the lanthionization composition may contain one or more sugars or a combination of hydrogenated starch hydrolysates and sugars (col. 2, lines 56-59). Syed explicitly teach a method for reducing damage to hair during the lanthionizing process (see claim 1). Syed teach that their representative sugars include glycerol, a C3 sugar alcohol. While Syed does not explicitly teach that heating is advantageous in minimizing damage resulting from the lanthionizing composition, Syed, nonetheless teach that application of one or more sugars in the lanthionization composition results in hair that has greater tensile strength, resulting in less damaged hair, and thus recognize a similar process objective as claimed by Appellant. Whilst Syed does not teach the step of heating to at least 45°C, the secondary references of Buheitel and Naito remedy this deficiency of Syed.

Appellant argues, "The Office fails to point to clear and particular reasons why the ordinary artisan would have been motivated to combine the teachings of either Buheitel or Naito with the teachings of Syed. Neither Buheitel nor Naito involve a lanthionizing composition, as taught in Syed, so the methods of Buheitel and Naito are not analogous to the methods of Syed. Syed does not teach or suggest that heating hair would have any beneficial effect."

Appellant's arguments were not persuasive. Admittedly, while Syed does not teach the heating step of keratinous fibers to at least 45°C, the secondary references of Buheitel or Naito resolve this deficiency of Syed. Buheitel, as noted above, expressly teach heating keratinous fibers to a temperature in the range of 30° to 55°C, which sufficiently meets Appellant's claimed temperature of at least 45°C, albeit, for a permanent hair shaping process (see col. 5, line 38 – col. 6, line 17). Moreover, Buheitel's composition corresponds to a permanent shaping composition, which is commonly used for severely damaged hair through chemicals, i.e.,

oxidatively treated hair (col. 3, lines 30-33). Naito also resolves the deficiency of Syed, by their teaching of a permanent waving that employs heating hair at higher temperatures, particularly, at temperatures of 40° to 160°C (see col. 5, lines 27-46). The temperatures for heating hair disclosed by Naito sufficiently meet the temperatures instantly claimed herein. While Naito's methods and compositions are drawn towards hair waving, nonetheless, Naito recognizes the step of heating hair by applying high temperatures that meet Appellant's claimed temperatures (*i.e.*, at least 45°C). Moreover, Naito teaches that taking into account the damage caused by heating hair, a suitable temperature range is from 40° to 160°C (col. 5, lines 35-37). In response to applicant's argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, the secondary references of Buheitel and Naito teach Appellant's claimed step of heating keratinous fibers and teach heating temperatures that meet Appellant's temperature of at least 45°C. Appellant's argument that "neither Buheitel nor Naito involve a lanthionizing composition and the methods of Buheitel and Naito are not analogous to the methods of Syed" was not persuasive since it has been held that a prior art reference must either be in the field of applicant's endeavor or, if not, then be reasonably pertinent to the particular problem with which the applicant was concerned, in order to be relied upon as a basis for rejection of the claimed invention. See *In re Oetiker*, 977 F.2d 1443, 24 USPQ2d 1443 (Fed. Cir. 1992). In this case, it is not necessary that

the primary and secondary references be drawn to the same exact methods, since they are drawn to same field of endeavor as Appellant's invention. Moreover, both secondary references recognize and teach that employing high temperatures in heating processes is advantageous.

C. Appellants separately argue claims 33-44:

Appellant argues, "Wisotzki, Koga and Syed do not provide any motivation for the ordinary artisan to arrive at the invention set forth in claims 33-44, which recite specific sugars and sugar subsets. Although the Office combines the teachings of each of Wisotzki, Koga and Syed with the teachings of Buheitel and Naito, nothing in Buheitel or Naito provides any motivation to select specific sugars, either alone or in combination with the primary references."

These arguments were not found persuasive. The prior art references are suggestive of the beneficial effects imparted by sugars in hair treating compositions and methods. The prior art also teaches the incorporation of similar sugars as claimed by Appellant. Wisotzki for instance, teach pentoses (5 C-atoms) and also the disaccharides derived from the pentoses (see col. 1, line 49 through col. 2, line 49). Wisotzki teaches that the mono- or disaccharides are any aldoses and ketoses or their mixtures. Wisotzki further teaches that suitable monosaccharides include glucose, mannose, galactose, ribose, arabinose, xylose, fructose and sorbose, while suitable disaccharides include sucrose, lactose, maltose and cellobiose (col. 2, line 36-49). Koga teach the use of xylobiose composition that contains xylan saccharifed products other than xylobiose, such as xylose and xylotriose (col. 2, lines 37-46). Syed teach that sugars used in their composition include glycerol (C3 sugar alcohol). The art generically teaches that the use of sugars imparts advantageous results. The selection of suitable or effective sugars, including the species of sugars claimed by Appellant, would be obvious to one of ordinary skill in the art, based on the intended outcome. The art explicitly suggests processes that employ sugars and

teach that the use of sugars provide for hair that is less damaged and hair that has greater tensile strength versus processes that do not employ sugars (see for instance, Syed, col.2, lines 48-59). The species of sugars claimed by Appellant does not render a patentable distinction since the art vividly teach the use of generic sugars, which would encompass the species of sugars instantly claimed.

D. Appellants separately argue claims 47-50 and 52:

Appellant argues, "These claims recite that the method comprises applying a composition that comprises at least one additional sugar. The Office has not pointed to any teachings in Wisotzki, Koga or Syed, either alone or in combination with Buheitel or Naito, that would motivate the ordinary artisan to include an additional sugar in the composition, as recited in claims 47-50 and 52."

These arguments were not found persuasive. The prior art teaches the incorporation of one or more sugars or mixtures thereof. For example, Wisotzki teaches a treatment composition comprising mono- or disaccharides, more especially, the pentoses (5 C-atoms) and hexoses (6 C-atoms), and also the disaccharides derived from the pentoses and hexoses (see reference column 1, line 49 through col. 2, line 49). Wisotzki teaches that the mono- or disaccharides are any aldoses and ketoses *or their mixtures*. Wisotzki teach a composition and method of regenerating hair split ends comprising at least one aldose, ketose or mixture thereof (see Claim 8). Koga teaches a preparation of xylobiose, where additional amounts of xylose, xylotriose and other substances were added (col. 3, lines 44-46). Syed also teach the incorporation of one or more additional sugars (see col. 2, lines 56-59). Thus, the prior art clearly teaches the use of multiple sugars in their processes for treating keratinous fibers and teach that the use of sugars imparts advantageous results, such as increasing the tensile strength of hair and/or reducing damage to hair.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

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